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ABSTRACT

This project was funded by the National Science Foundation to help institutions of higher education develop course-related library instruction programs for students in undergraduate science programs. The fourth volume contains appendices ten through twelve. These include excerpts from participant team reports, the project announcement in College and Research Libraries News, and application sheets for second-year participants. (Author/KP)

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VOLUME IV

The Development of Course Related Library and Literature Use Instruction in Undergraduate Science Programs

(NSF Grant DSI 76-10129)

U.S. DEPARTMENT OF HEALTH EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION

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Annual Report

June 22, 1976 - July 1, 1977

by

Thomas Kirk

Project Director

September, 1977

IR005347

NATIONAL SCIENCE FOUNDATION

LIBRARY INSTRUCTION GRANT

REPORT OF ACTIVITY

Submitted by:

L. H. Geckler, Ph.D.
Science Reference Librarian
Milton S. Eisenhower Library
Johns Hopkins University
Baltimore, Maryland
April 22, 1977

N.S.F. LIBRARY INSTRUCTION GRANT REPORT

C O U R S E D E S C R I P T I O N

Principles of Physiology 25.10

Advanced Physiology 25.336

Students in Principles of Physiology 25.10 and Advanced Physiology 25.336 attend the same set of lectures which are held three times a week. The lectures present basic information on the fundamental mechanisms of the major physiological systems: circulatory, digestive, excretory, nervous, muscular, endocrine, and reproductive. Control and homeostatic mechanisms are emphasized and examples of malfunctions in various systems are given by medical experts. Many of the lectures are given by specialists in the various fields of physiology, most of them from the Johns Hopkins Medical Institutions and the Biophysics Department of the Johns Hopkins University. A high quality of teaching prevails in the course. The instruction is marked by graphic illustrations, analogies and a Socratic approach to teaching which helps in maintaining a high interest level among students. Those enrolled in the advanced course turn in more advanced problems (see examples attached) and have a different text, Ganong's Medical Physiology. The text for the introductory course is Schmidt-Nielsen's Animal Physiology. The primary text for both courses is Vander, Sherman and Luciano's Human Physiology (2nd ed., New York. McGraw Hill, 1975). Two discussion periods are held weekly to clarify problems, lectures, or the text. Attendance at one of these discussion periods is optional. Three papers are written which will count as three-fifths of the course grade. The topics for the papers are chosen from material related to topics covered in the lectures. A course outline follows.

25.10 Principles of Physiology
25.336 Advanced Physiology

Jan.	24, 1977	Introduction	Love
	25	Osmotic Pressure, Diffusion	Love
	26	Homeostasis, Feedback Control	Hunt
	31	Cell Organelles, Membrane Transport, Cytoplasmic	Love
Feb.	1	Sensory - Motor Systems	Love
	2	Neurons - cell, axon, action potential	Love
	7	Neurons - synapses	Wiggins
	8	Control of Muscle stretch receptor - reflex-refferant	Love
	9	Muscle - Cells actin myosin-excitation	Carlson
	14	Autonomic Nervous System	
	15	Endocrine Control	
	16	Film on Wm. Harvey	TA's
	22	Films on Ribosomes	TA's
	23	Circulation	
1st paper due	28	Respiration & Gas Transport	Love
Mar.	1	Hemoglobin	Love
	2	Capillary Circ. & Blood Clotting	
	7	Pathophysiology of Heart Attacks	
	8	Excretion and the Kidney	Love
	9	Pathophysiology of the Kidney	
	14	Water & Electrolyte Balance	
	15	Digestion	
	16	"	
	21	"	
	22	Immune System	
2nd paper due	23	"	
		SPRING VACATION	
Apr.	4	Metabolism & Body Temp. (Thyroid)	
	5	The Brain (over all anatomy & functional layout)	Hunt
	6	Sensory Receptors (define our universe)	Hunt
	11	Visual Pathway	Hunt
	12	Auditory and Somatic Pathways	Hunt
	13	Pain	
	18	Analgesia	
	19	Sensory Areas of the Brain	Hunt
	20	Endocrine & Motor Outputs of Brain	Hunt
	25	Functions of Cerebral Cortex	
	26	Behavioral Endocrinology Copulatory	Schwartz
	27	Endocrine Control of Sexual System Develop.	Bigham
3rd paper due May	2	Reproduction	
	3	Fertility Regulation	
	4	Consciousness & Behavior	Hunt

N.S.F. LIBRARY INSTRUCTION GRANT REPORT

STASTICS ON STUDENTS IN COURSE

Principles of Physiology	25.10
Advanced Physiology	25.336

Total enrollment for 1977 Spring Semester: 180

Withdrawn by February 28, 1977: 9

Freshmen:	97
Sophomores:	9
Juniors:	26
Seniors:	11
Special Students:	8

N.S.F. LIBRARY INSTRUCTION GRANT REPORT

OBJECTIVES OF LIBRARY AND LITERATURE INSTRUCTION

The Johns Hopkins University

Objectives of Instruction:

To assist students with the identification, location and use of pertinent reference materials, bibliographic records and library materials in general in The Milton S. Eisenhower Library. Emphasis was placed on various research strategies which are helpful in research on subjects of current interest in physiology. The end products of the research are short review papers on current physiology topics.

N.S.F. LIBRARY INSTRUCTION GRANT REPORT

O U T L I N E O F O R A L I N S T R U C T I O N

The Johns Hopkins University

I. How to find reference materials in the MSE Library

A. Card Catalogs

1. Author/titles (physiology examples)

2. Subject (physiology examples)

3. L C Subject Headings

4. Serials Catalog

B. Library of Congress. Subject Classification System - examples of arrangement of science materials in MSE Library

C. Science Reference Room and Abstract Area

1. Catalogs

a. Science/Engineering Catalog

b. Science Reference Catalog

c. Serials Catalog

2. References

a. Handbooks

b. Dictionaries

c. Science Reference Stacks

d. Abstract Area

D. Current Science Periodicals Room

II. Search Strategies for Bibliographic Research

A. Journals - Science, Nature, Scientific American, Physiological Reviews.

1. Ideas for topics for paper

2. Completed form of paper

B. Encyclopedias - McGraw-Hill Encyclopedia of Science & Technology and others

1. Summary of topic

2. References to expand on topic

C. Abstracts and Indexes - Biological Abstracts, Science Citation Index, Index Medicus and others

1. Current research on topic

2. Critiques of research on topic

D. Review Serials - Annual Review of Physiology and others

1. Current research on topic

2. Critiques of research on topic

E. Texts

1. Ideas for topic of paper

2. Summary of topic

3. References to expand on topic

F. Handbooks and Dictionaries

Clarification of terms used in articles on topic of paper

G. Bibliographies

References to expand on topic

N.S.F. LIBRARY INSTRUCTION GRANT REPORT

A S S I G N M E N T S G I V E N T O S T U D E N T S

Three papers are to be written which will count as three-fifths of the grade in the course. They are due on February 28, March 23, and May 2. The topics for the papers are to be chosen from material related to that covered in the lectures up to the time the paper is due. The topic should be of interest to the student and his peers. The teaching assistants will be glad to comment on the suitability of a topic selected. Avoid selecting a topic that is too broad, too clinical to be of general interest, or too sensational. Ideas for topics can be gleaned from Scientific American, Science, Nature, texts or the Encyclopedia Britannica.

The following format is required in the paper. It should have a cover page with name and title. The second page should start off with the title and the text of the paper. The paper should consist of 4-7 pages double spaced typed text plus figures. Too many fugures will lower the grade. The exact arrangement of the text of the paper should be modeled after either the reports in Science or the articles in the Journal of Physiology (British). Research procedure could include searching your topic in Biological Abstracts or pursuing citations from one of the texts. Science Citation Index can be used to go forward chronologically in the literature of a given subject. The bibliography produced in the paper should contain references to serious, in-depth science and physiology journals. An unacceptable bibliography would have references only to publications such as Scientific American, New York Times, and Esquire. An acceptable bibliography will have references to such publications as Journal of Physiology, Physiological Reviews, and Science.

NSF LIBRARY INSTRUCTION GRANT REPORT

R E V I E W S

A. Evaluation form and results

B. Personal critique

C. Proposals for revision

D. October workshop retrospective

The Johns Hopkins University

SUMMARY OF EVALUATION SHEETS

Distributed on:	Returned:
February 9, 1977	19
March 16, 1977	3
	23 total

or 22% of students attending

or 70% ☐ 25.10 Principles of Physiology

or 30% ☐ 25.336 Advanced Physiology

Comment Sheet on Library Instruction:

1. 17 or 74% ☐ Freshman 1 or 4% ☐ Sophmore 2 or 9% ☐ Junior 3 or 13% ☐ Senior

2. Most of the information was:

14 or 61% ☐ new to me.

9 or 39% ☐ old to me. (the majority of these students said that they picked up some facts which helped them with the assignment)

3. I did, 22 did not ☐, learn some facts that will help me to find materials for writing papers more efficiently.

4. Comments and Suggestions

a. Have a question time at the end of the instruction

b. Give detailed examples of abstract and journal use

c. Place more emphasis on Index Medicus and its use

d. Give a tour of the Library in order to handle the actual materials

One senior said that most of the information was new to him.

The Johns Hopkins University

PERSONAL CRITIQUE

The whole library instruction presentation should be centered around the research strategies useful for producing quality research papers. The location of library materials and catalogs should be brought in incidentally. I should have made this clear to the instructor instead of leaving the exposition of search strategies primarily to him. He had requested this "division of labor" in our planning sessions in the fall but during the library instruction period, little time was actually devoted to search strategies. I would not structure the presentation in that way again.

PROPOSALS FOR THE REVISION OF THE PROJECT

Thirty minutes is too short a time for this instruction. At least an hour is necessary. Much more emphasis should be given to detailed examples of abstract and journal use and to suggestions of various possible research strategies in researching a paper topic. The instruction should be held in the Library where students can handle and see the materials in their context. Students should be able to sign up for these sessions in groups of twenty-five (no more). The instruction sessions should all be scheduled at the same time as the regular class discussion is normally held and not outside of class time.

There should be two evaluation sheets, one to be turned in at the close of the library instruction period and one with more detailed questions to be turned in with the first paper. It should be understood that no paper will be accepted unless an evaluation sheet comes with it. Extra copies of the evaluation sheet should be easily available--not only on the day of instruction but also on the day the first paper is handed in. Teaching Assistants could be supplied with a list of those students who attended the library instruction.

PROPOSALS... (cont'd)

On request, further instruction should be available for questions and make-up. The additional class instruction period should also be scheduled at times when no class discussion period is scheduled. At least two or three meetings should be scheduled between the instructor and the librarian so that efforts can be co-ordinated. I would suggest that these meetings take place shortly after the course instruction has begun and several days before the library instruction is to take place.

OCTOBER WORKSHOP RETROSPECTIVE

It was an excellent workshop, one of the most productive I have ever attended. Our effort would have been more successful, I feel, if more emphasis had been given to the need for and skills leading to the instructor/librarian cooperation. All in all, that lack was the most difficult aspect of the whole project. Perhaps this is our problem alone, but I doubt it. Some workshop emphasis on this might help others.

Lucie H. Geckler

Lucie H. Geckler, Ph. D.
Science Reference Librarian

NATIONAL SCIENCE FOUNDATION

LIBRARY INSTRUCTION GRANT

REPORT OF ACTIVITY

Submitted by:

Katherine Rottsolk
Reference Librarian/ILL Librarian
Marland Madson
Biology Dept.
St. Olaf College
Northfield, Minnesota

Guidelines for Report on Activity
St. Olaf College

(From 2. "Instructional unit", through 5,
except for 3. Student results)

INSTRUCTIONAL UNIT

The St. Olaf library staff believes, with Whitehead, that "education is the acquisition of the art of the utilization of knowledge." With that in mind, the librarians and the Biology department have these goals for the library instruction program:

Overall goals for sequential library instruction in STO Biology courses:

The graduating biology major should be able, by himself, to efficiently and effectively:

1. gain access to scholarly research materials in biology and related fields.
2. judge and evaluate the research located.
3. use the appropriate materials to execute a specific assignment.

Specific objectives for Biology 21, 22, and 23 are:

The student should be able to:

1. recognize the library as a primary source of recorded information.
2. recognize the library reference staff as a readily available source of information.
3. construct and follow a simple search strategy efficiently, recognizing when to proceed from one step to the next.
4. use effectively, when pursuing step three:
    a. science reference books
        1. science encyclopedias
        2. biology dictionaries and handbooks
        3. annual reviews
    b. science abstracts, indexes, and bibliographies, distinguishing their uniqueness
        1. Biological Abstracts
        2. Science Citation Index

3. maybe the new Combined Index

4. specialized bibliographic indexes

c. the card catalog and LC subject heading book

5. demonstrate his understanding of steps three and four by preparing a bibliographic essay on an assigned topic. His ability to do this and to integrate his materials, showing some selectivity, will be evaluated by the librarians and/or the biology professor.

The assignment for Biology 32 (Genetics) as pursued in March-April, 1977, is attached. To implement it, a reference librarian met with the entire class (175 students) during their several laboratory periods, demonstrating a successful search strategy for one of the suggested topics. A one-page summary (one side listing and briefly describing the pertinent indices, abstracts, and review serials; the other side charting a very abbreviated search progression) was distributed to each student. The brief lecture was illustrated by overhead transparencies of the handout and of specific examples of how each tool described could be used to pursue a specific subject search.

For the next hour, the reference librarians and the professor were available as resource persons in the areas where the tools were shelved. The laboratory section was divided into groups of about six; each student went to a specified area to discover what questions for the assignment his assigned tool was especially helpful in answering (the resource people were busy helping overcome frustration!). Then each "committee" reassembled and pooled its information. Because a resource person met with each group, much misinformation was cleared up at this point.

The purpose of the laboratory period exercise and follow up paper was to accomplish as many of the objectives of the Earlham guided exercise as

possible in such a brief time. The students' individual follow-up assignments built on this introduction. The work counted 100 points toward a total of 700 for the final grade (100 points for lab work; 400 points total for four unit exams; 100 points for the review type final; 100 for the library paper).

While we would not choose this approach for a Level I or II group for the future because we believe the guided exercise to be more efficient and effective for a large class, the students' sharing with each other and working with the librarians in a rather structured but informal setting was an excellent learning device.

Proposed revisions:

The October meeting at Earlham came too late to incorporate the ideas gleaned there into the Level I St. Olaf biology courses for last fall, except in a one laboratory period assignment in December for Biology 21. What it was invaluable in doing was in giving focus to our "good intentions" to build into the biology major's courses a carefully planned sequential series of library search strategy assignments.

We will attempt to incorporate some meaningful evaluation into the program. For several years, incoming freshmen have taken a very brief library skills test in their English 11 or Religion 11 classes. These have been corrected by the library and returned to the professor with a note explaining where his students ranked with others in the incoming class. Students scoring very low were contacted individually by the librarians and those with extremely high scores were sent congratulatory notes. From here on we will attempt to more systematically follow up the low scoring students.

This fall we will add a brief, biology-specific pre-test, administered at the time of the biology library lecture in the three first level courses. A test at the junior or senior level will be added by the time the program reaches to Level III. If it can be developed soon enough to be used with present students who have not had a library component with their courses, we will be able to have some "pre-program" comparisons. Dr. Judy Richardson, head of Educational Research at St. Olaf, will work with me this summer to devise a test.

Before classes begin this fall, representatives of the biology department will meet with the librarians and representatives of several other subject areas which together comprise the first year targets for the St. Olaf NEH/CLR grant as we attempt to develop bibliographic instruction for St. Olaf students.

Our specific plans for Biology 23 (and they will be essentially the same for Biology 21 and 22) include the following:

Time schedule:

A. September: The Biology 23 laboratory assistants, plus the paraprofessional in charge of the science library, plus at least some of the librarians who are unfamiliar with specific aspects of the biology program, will work through the guided exercise and then discuss problems encountered and how best to help students solve them. The laboratory assistants will be paid for this; the meetings will either be evenings or Saturday.

B. October 1: Classroom lecture on search strategy, with pre-test and handouts (by KR)

C. October 3-21: A rather eleborate schedule (attached) which divides each of the eight laboratory sections so that one-half will be beginning the library exercise the first week, the other half the second week. Thus only half of a laboratory group, or 15-17 students,

will be beginning the use of library materials during a laboratory period.

Personnel:

A. The laboratory assistants will be available in the library to students during their regularly assigned laboratory periods for all three weeks. (Dr. Madson is arranging to handle the regular labs by himself durings weeks one and three!!)

B. The science library paraprofessional will be knowledgeable about the assignment and available to assist students whenever she is in the building.

C. At least one librarian will be in the science library from 1-3, Monday and Friday, and 1-5, Tuesday, Wednesday, and Thursday, during the time allotted for the assignment.

Assignment:

After the guided exercise is completed and the response sheet handed in, a librarian will evaluate this work and return the evaluation to the student.

The follow-up assignment will be a very limited bibliographic essay which will follow the steps of the search strategy as it worked (or didn't work) when applied to a topic assigned each student by the professor. A very truncated assignment because of 1)the severe time limitation, and 2)the recognition that most students are freshmen just beginning their second month in college, we will feel successful if we can familiarize the students with a)the science library, b)the librarians, c)a few heretofore unfamiliar tools and their usefulness, and d)a simple search strategy which is transferable.

It will be judged by both the instructor and the librarians, at least the first year, and will be a substantial part of the final grade.

The Biology 32 (Genetics) class next spring, 1978, then, will have a library component which will attempt to build on this basic framework by adding an "evaluation of materials found" element. The Level II instruction will culminate in a research paper which will demonstrate search strategy understanding plus a degree of sophistication in analyzing and handling wisely the information found.

The annotations in the class handouts we have been using are too brief. We have relied on our classroom presentation to distinguish between the various tools. That is fine, but the annotations should do the same. They will be redone. The search strategy chart will be tailored to each assignment: i.e., where current literature only is to be addressed, the more traditional steps will be listed together so the student will be aware that he is attacking only a portion of the whole.

As we reach Level III (and some Level II) courses where enrollment is lower, students will be asked to evaluate each other's papers, including their library procedure.

The students in the St. Olaf nursing program have special needs. They move in and out of our science courses in an atypical pattern; in addition, they spend some terms off-campus using hospital libraries. I have met several times with the nursing department's representatives and we are planning an articulated program, building upon the Biology Level I introduction, which should prepare the major in nursing for his extensive independent research project.

SUGGESTIONS FOR CHANGE IN FUTURE WORKSHOPS:

In discussing with each other the October workshop, Dr. Madson and I felt there was a lot to learn in very little time, so the problem was how to use the time to maximum benefit. We could identify only one thing that might be left out without lessening the impact: the inclusion of non-scientists in the presentations. As a generalist librarian, they were interesting to me, and valuable, but all the other librarians were scientists, as were all the classroom instructors.

Biology 23: Laboratory time schedules, October 3-21, 1977

October 3-7--Meet with one-half of students from each of eight laboratory sections:

Monday	1:00-3:00
Tuesday	1:00-3:00; 3:10-5:10
Wed.	1:00-3:00; 3:10-5:10
Thu.	1:00-3:00; 3:10-5:10
Friday	1:00-3:00

October 10-14--Meet with second half of students from each of eight laboratory sections on the same schedule as above.

First group works on papers.

October 17-21--Second group works on papers; first group returns to lab.

Biology 23, Biological Principles, is the foundation course taken by all Biology majors. Meeting three class periods and one two-hour laboratory period each week, it addresses the major principles and concepts of biological sciences as an introduction to and prerequisite for other courses. By the use of a guided exercise very similar to that used at Earlham, followed by an assignment requiring utilization of the search strategy, we hope to increase our student's sophistication with regard to library materials in biology.

Biology 21, Biological Science, is a course for non-majors which stresses the human ecology and human genetics approach. Emphasis is on evaluation, heredity, and social implications. Here, as well, the guided exercise will be used, followed by a brief paper which builds on the knowledge just acquired.

Biology 22, Biological Science, is a course for non-majors which stresses the botanical and ecological approach. Library instruction will be similar to that in Biology 21.

Biology 32, Genetics, is the second course usually taken by Biology majors. It teaches "heredity with emphasis on cellular and molecular aspects. Laboratory experiments with Drosophila and other organisms; cytological studies." Building on the basic search strategy learned in Biology 23, the library instruction will emphasize primary literature use and the ability to evaluate materials as they are located.

Class enrollments:

Biology 21	115	Freshmen:	50%	Sophomores:	30%
		Juniors:	10%	Seniors:	10%
22	75	Freshmen:	40%	Sophomores:	30%
		Juniors:	15%	Seniors:	15%
23	250	Freshmen:	55%	Sophomores:	39%
		Juniors:	5%	Seniors:	1%
32	175	Freshmen:	35%	Sophomores:	50%
		Juniors:	10%	Seniors:	5%

Biology 32

LIBRARY ASSIGNMENT

You should select a fairly limited topic for this assignment. Be sure to include the following items:

1. 2-3 page (typed) summary of the topic
2. bibliographies from each of the resources (Index Medicus, Science Citation Index, etc) -- these should be on separate sheets and the source should be indicated.
3. indicate key articles with an * on each bibliography
4. do not go any farther back than 1970 (except to indicate the first article published)
5. answer questions on the xeroxed sheet and attach the sheet to the summary and bibliographies

COMMENT: If you want articles through Minitex.....they must be KEY articles.

Point value of the library assignment = 100 pts.

Date due: (March ~~17~~) postponed

If you request assistance from the librarians, be sure to indicate that you are working on your Genetics (Biology 32) library assignment. They are cooperating with us on this assignment.

Biology 32

LIBRARY RESEARCH

After you have completed your literature search you should attempt to answer the following questions.

1. What are the KEY publications in your bibliographies? (Indicate these with an * on your paper)

2. Which individuals seem to be the most active researchers in this particular topic?

3. Identify the last published article.

4. Identify the first published article.

5. Is a review article available? If so where?

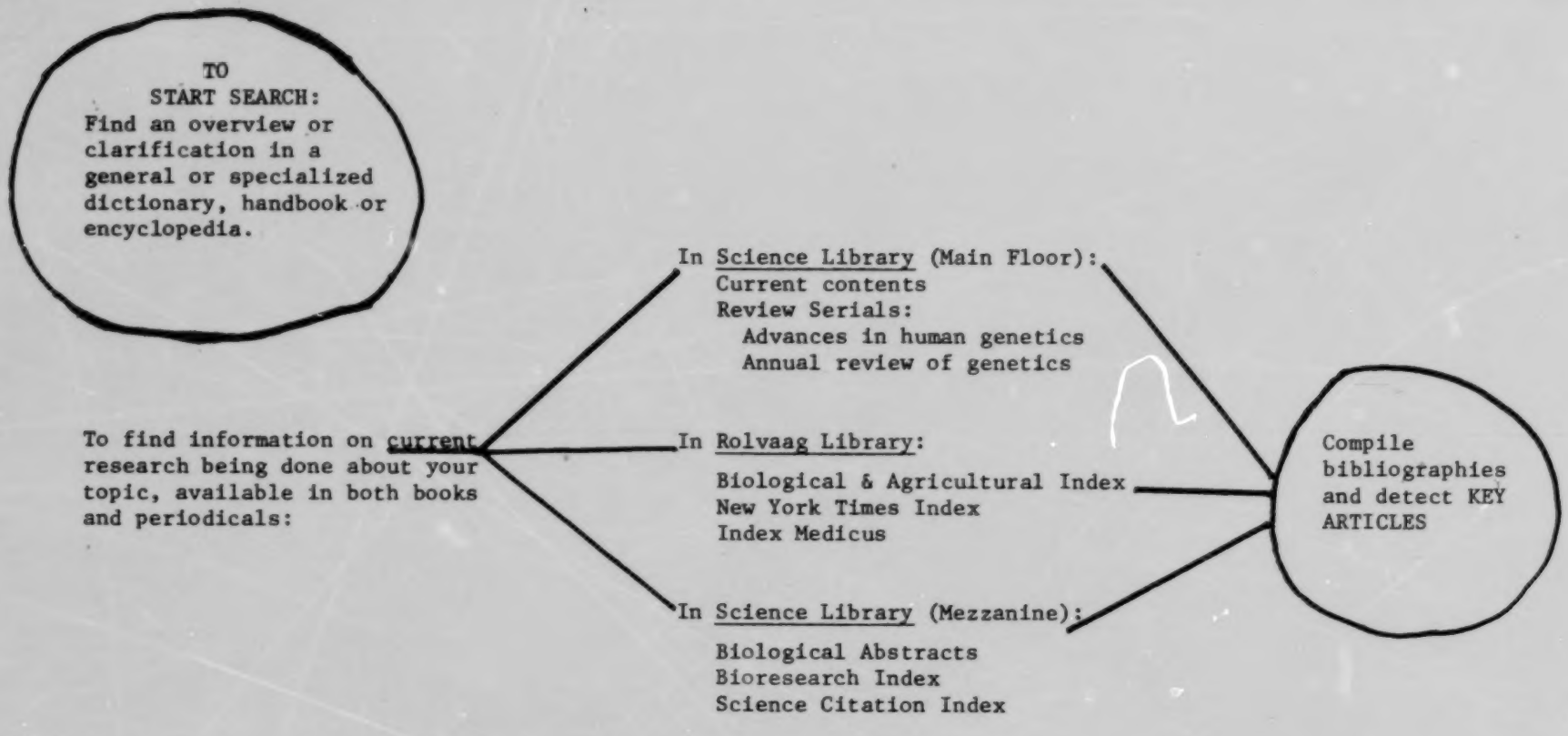
6. Which journals seem to contain the most articles on this topic?

For your summary you should consider the KEY articles (including the review articles) first and should only attempt to read a few of the other pertinent articles.

Biology 32

POSSIBLE PAPER TOPICS

1. eugenics
2. genetic screening
3. amniocentesis
4. palindromes
5. sister chromatid exchange
6. synthesis of a gene
7. albinism
8. hemophilia
9. G6PD polymorphism
10. chromosomal hermaphroditism
11. incest and genetic consequences
12. synaptinemal complex and genetic recombination
13. satellite DNA
14. reverse transcriptase
15. cytoplasmic DNA
16. phenylketonuria
17. Tay sachs disease
18. alkaptonuria
19. porphyria
20. Huntington's chorea
21. meiotic drive
22. nucleolus organizer region
23. cloning
24. in vito fertilization
25. Lyon hypothesis
26. sickle-cell anemia
27. Ames mutagen test
28. Y chromosome
29. sex chromosomes
30. Addison's disease
31. Down's syndrome
32. Turner's syndrome
33. Klinefelter's syndrome
34. XYY syndrome
35. DNA repair
36. Xeroderma pigmentosum
37. epistasis
38. Cri-du-chat syndrome
39. Lesch-Nyhan syndrome
40. testicular feminization
41. adrenal genital syndrome
42. inbreeding depression
43. neutral alleles
44. paramutation
45. gene conversion
46. Patau's syndrome
47. Philadelphia chromosome
48. t-RNA molecule
49. marker chromosomes
50. oncogenic viruses
51. X chromosome
52. y-linked genes
53. heterosis
54. alcaptonuria
55. histone proteins
56. quadriradial figures
57. Bloom's syndrome
58. Fanconi's anemia
59. dermatoglyphics
60. G banding
61. C banding
62. Q banding
63. T banding
64. reciprocal translocation
65. dyslexia
66. Cockayne's syndrome
67. replicons
68. DNA polymerase(s)
69. RNA polymerase(s)
70. mRNA
71. ring chromosomes
72. recombinant DNA
73. polytene chromosomes
74. endoreduplicated cells
75. human chromosome culturing
76. Founder principle


TO
START SEARCH:
Find an overview or clarification in a general or specialized dictionary, handbook or encyclopedia.
To find information on current research being done about your topic, available in both books and periodicals:
In Science Library (Main Floor):
Current contents
Review Serials:
Advances in human genetics
Annual review of genetics
In Rolvaag Library:
Biological & Agricultural Index
New York Times Index
Index Medicus
In Science Library (Mezzanine):
Biological Abstracts
Bioresearch Index
Science Citation Index
Compile bibliographies and detect KEY ARTICLES

REVIEW SERIALS
(annuals containing critical review articles summarizing recent research followed by bibliographies)

Advances in human genetics (QH431/.A1A32)

Annual review of genetics (QH431/.A1A54) (Chapter index for volumes 5-9 in back of 9)

INDEXES AND ABSTRACTS

Biological and Agricultural Index (Rolvaag R.R./Z5073/.A46)
A detailed subject index to articles found in nearly 200 English language periodicals covering bacteriology, biochemistry, biology, genetics, and many more areas.

Biological Abstracts (Science Library mezzanine)
The major abstracting service in biology, it contains summaries of articles in theoretical and applied biology found in over 5500 periodicals. Each issue has an author index, biosystematic index, CROSS index, and B.A.S.I.C. (a computer generated subject index).

Bioresearch Index (Science Library mezzanine)
Monthly index to research reports in the life sciences which are not covered by Biological Abstracts.

Index Medicus (Rolvaag, R.R./Z6660/.C8)
A comprehensive subject index to the world's medical literature.

Science Citation Index (Science Library mezzanine)
An international index to the literature of science, medicine, agriculture, technology, and the behavioral sciences, it is arranged in 3 sections: Permuterm (keyword) Subject Index; Source (author) Index; and Citation Index (older publications cited in current research).

New York Times Index
A condensed, classified history of the world as recorded day-by-day in the New York Times Index.

NATIONAL SCIENCE FOUNDATION

LIBRARY INSTRUCTION GRANT

R E P O R T O F A C T I V I T Y

Submitted by:

Robert E. Lawrence
Head of Science and
Technology Division
Oregon State University
Corvallis, Oregon

Report on Course-Related Library Instruction

I have enclosed a complete set of handouts, lists, directions, and exercises that we distributed to the class during the winter term, 1977.

The class was officially designated as Microbiology 405, and is a reading and conference class. The students were chosen by Dr. Parks so that the class consisted of a variety of students: 3 freshmen, 2 sophomores, 2 juniors, 6 seniors, and 4 graduate students. Microbiology 405 is customarily a reading and conference class, but was, for our purposes, a library instruction class. All of the students were enrolled, or intended to enroll, as majors in Microbiology. The goal of the course was to introduce the student to a variety of information sources relevant to microbiology and related subjects: to teach the student the location of these information sources in the OSU Library; through the writing of a paper to let the student use these information sources to locate relevant literature about the subject of that paper. The students were graded both on the successful use of the information sources and on the content of the paper.

The class was conducted in an informal, unstructured way; that is, there were no scheduled class hours and all the work was done at the students' convenience. Mr. Lawrence, the librarian, had "office hours" during which he was available and the students were expected to "check in" with Dr. Parks at intervals during the term. All told, the class met four to six times during the term so that the instructor could check on progress and the students could ask questions. The only formal requirements were the two papers and the use of the Library Information Retrieval Service.

The students were supplied with several handouts.

1. A Bibliography of General Reference Sources in Biology. This was pat-

terned after that used by Tom Kirk, but was specially tailored to the OSU Library; using OSU call numbers and locations.

2. A Guided Exercise for Locating Biological Literature. This was also freely adapted from Tom Kirk's "Guided Exercise".
3. Several instruction sheets that were distributed during the term.
4. A guide to the Use of Chemical Abstracts.
5. A list of questions or topics from which the students could choose one on which to write their paper.
6. A rationale for using a standard bibliographic form and some examples of good bibliographic form. Also a letter concerning bibliographies that appeared in Science.
7. Lastly, some instructions and comments about the class or about the paper.
8. The students also were expected to look at three slide-tapes that introduced a) Biological Abstracts, b) Chemical Abstracts, and c) Science Citation Index.
9. The students were expected to use the Library Information Retrieval Service to find citations relevant to their topic. (More about this later).

The students, after an introductory lecture, went through the Guided Exercise, chose a topic for their paper, narrowed the topic, located 4 or 5 relevant citations using the information sources listed in the Guided Exercise, wrote the first paper, chose a second topic, attended a lecture on the Library Information Retrieval Service, used the Library Information Retrieval Service to collect relevant citations for their topic, wrote the second paper. An evaluation form was completed by nearly all the students. A copy of these evaluation forms has been enclosed.

Perhaps the most interesting part of the term's work was the opportunity to use the Library Information Retrieval Service. (A brochure is enclosed.) Briefly, the students, under the direction of the Library Search Analyst, used the facilities of the Lockheed Information System, Systems Development Corporation, and Medline to locate citations relevant to their topic. The Library Information Retrieval Service was able to supply a terminal and experienced search analysts. In addition, the Dean of Undergraduate Studies, Stuart Knapp, provided $500 to the library to underwrite the cost of running the searches for this class. The OSU Library makes a charge for this operation; a charge that recovers the cost of the telephone connection and the computer time. The following table shows that data bases searched and the number of searches in each data base for this class. Some students used as many as 3 different data bases, while others were satisfied searching only 1 data base.

BIOSIS (Biological Abstracts)		12 searches
ChemCon (Chemical Abstracts)		9
SciSearch (Science Citation Index)		2
SSIE (Smithsonian Science Information Exchange)		1
Medline (Index Medicus)		7
	Total	31
Cost Range: $2.60 to $45.33	Total Cost	$363.76
	Average Cost	$11.70/search

Average number of citations retrieved per search: 37

Range of citations: from 7 to 134

I have no information on the number of citations that were relevant to the particular topic.

The evaluation gives some qualitiative indications rather than quantitative results; indications that were not always what I had expected. For example, with only one exception, all the students indicated that the use of the Library Information Retrieval Service and the Guided Exercise were the parts of the class they found the most valuable. (The single exception found little of value in the entire course, so I can dismiss him/her as a constant complainer about everything.) About half the class favored a more structured lecture situation over the unstructured form. Most of the students felt that some knowledge of the subject was necessary to make sense of the library information sources; that is, they felt that juniors or seniors could benefit more from a course like this, rather than freshmen or sophomores. There was divided opinion on the value of this class for graduate students. Some of the graduate students said that they were already familiar with most of the information sources in the library. (Personally, I would tend to doubt this.)

Both the evaluation form and personal conversation with the students confirm that the Guided Exercise and the Information Retrieval Service were the most valuable parts of the course. I think this is so for the following reasons; the Guided Exercise gave the students a method for approaching any topic in microbiology that required a search of the literature; the Information Retrieval Service showed them a method of searching the literature that saved hours of time and was a sample of what to expect in library service in the future.

The one real problem was the incredible amount of time that some of this took. I figure that the computer search of the literature through the Library Information Retrieval Service took about two hours per student; time that had to be spent meeting individually with the student discussing the topic and operating the terminal for the search. All this had to be done during a two

week period. I would recommend that computer literature searches be done by groups of 4 students, not by each student separately. The other problem is that the computer search is an additional cost that will have to be paid by somebody; either a department or the library or the college or university administration. We were lucky to have a Dean of Undergraduate Studies who was able to give us money to operate the system. I see no reason why this expense could not be considered similar to any other expense connected with a course. This is, however, an arrangement that will have to be worked out with the university administration.

Presently, the OSU Library has three other courses in library user education. Two of these are for undergraduates and are open to all so that there is no similarity of background of interest; the other is a class in library instruction that is offered as a seminar course in the Department of Fisheries and Wildlife. This class has been given for two terms and has proved very popular with the graduate students. It is offered as one of a variety of seminar courses that all the graduate students in that department must take. The two courses for undergraduates are courses in library use and are not related to any particular department. The interest and enthusiasm seem to belong to the library courses that are attached to a particular course or department, not those that have no common subject attachment.

Judging from the reaction of the students this past term, I think that course related library instruction should be extended to other departments. Perhaps a shortened version, lasting only a few weeks, would be suitable. Two of the components of this past terms course, the Guided Exercise and the Information Retrieval Service, should be offered to other students. The exact nature of the course will have to be determined by the appropriate department.

NATIONAL SCIENCE FOUNDATION

LIBRARY INSTRUCTION GRANT

R E P O R T O F A C T I V I T Y

Submitted by:

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Tucson, Arizona
May, 1977

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Institutional and Library Context

The library at the University of Arizona is a well-known academic library and is one of the major research libraries in the southwestern United States. It contains over 2,000,000 items--including books, microforms, non-book media, government documents, periodicals, and a variety of other items. It is a member of the Center for Research Libraries and the Association of Research Libraries. The science library is the largest branch of the university library and is housed in a separate building. (Brochures further describing both libraries are attached to this report.)

For some time, the library at the University of Arizona has offered tours and orientation for classes or individuals wishing to take advantage of the opportunity to become better acquainted with library facilities. For the most part, however, these tours have not involved intensive bibliographic instruction. Participation in the NSF project involved a joint proposal on the part of the library and two departments of the University--the Department of English and the College of Engineering. The library was interested in finding ways of giving more depth and meaning to instruction in library and literature use, and these two departments also indicated that they felt that this was a desirable direction in which to move.

There has been a definite impetus from within the Engineering College to expand their curricula to include more courses from the humanities. In particular they wish to make writing, especially technical writing a significant option in the engineering program--to develop an awareness in their students that the ability to write is of the utmost importance

Institutional and Library Context cont'd.

throughout their careers, and to urge as many students as possible to elect technical writing. (Technical writing may eventually even become a requirement in the engineering curricula.) The Engineering College has also expressed its interest in having library and literature use instruction form a significant segment of a course in technical writing for engineers.

Before a course in technical writing for engineers is developed, however, the Engineering College thought it would be wise to introduce some form of writing and library use instruction into some of their freshman classes. The classes which were chosen were the basic courses in nuclear and electrical engineering with which Dr. McCormick has been working closely during the past year.

Ms. Dorothy Fuller of the Department of English, Dr. James McCormick of the College of Engineering, and Ms. Joan Murphy, Science Reference Librarian, agreed upon a proposal which could be submitted to the National Science Foundation. Subsequent to being accepted to the NSF Earlham project, pilot programs involving the library, the English Department and the Engineering College were developed. During the coming year it would be desirable to see the broadening and further development of these programs to include upper-classmen as well as freshmen in the Engineering College, and additional sections of technical writing in the English Department.

Ms. Dorothy Fuller and Dr. James McCormick have provided descriptions of the courses in which library and literature use instruction was involved, a breakdown of the numbers and class standing of the students enrolled in the courses, copies of some of the papers which the students produced, and their own as well as their students' evaluations of the library use

instruction program. (These are attached to this report, along with their personal critiques of the project.)

The overall objectives of the library instruction unit were similar for the course in technical writing and for the basic courses in engineering. These objectives consisted of providing the students with insight into the various primary and secondary sources which they might use in report writing (and becoming aware of the difference between the two, and how to progress from secondary to primary sources), showing them how to make use of the card catalog--especially the subject card catalog, and introducing them to the reference tools available in the library--particularly those bearing directly upon their specific subject areas and fields of interest.

It was agreed at the fall Earlham Conference that Dr. McCormick would oversee development of his library instruction units and their accompanying reports, while Ms. Fuller and Ms. Murphy worked together to develop a similar program for the technical writing class in the English Department.

A structured and formalized program was developed by Ms. Fuller and Ms. Murphy for the class in technical writing. It is hoped that if the program proves successful, it may be adopted, with whatever modifications are deemed necessary, by the other technical writing sections.

Ms. Fuller initiated her class in technical writing with an introduction to types of report writing, the components of a technical report, and the styles and graphics needed for submitting a paper to a scientific or technical journal. The students were asked to indicate topics of study which they personally felt were the single most significant and interesting problems in their respective fields (forestry, chemistry, botany, wildlife management, nutrition, child development, etc.). Later in the semester these topics were used as the subject for a research report.

Instructional Unit Cont'd.

Before the report was written, the class was given an hour of bibliographic instruction in science reference sources. Ms. Murphy developed an extensive, twenty-six page bibliography which described many important reference tools in a variety of different subject areas to be found in the science library at the University of Arizona. A copy of this bibliography was given to each of the students. This bibliography emphasized the differences between the various types of reference tools available to the students, such as bibliographies, indexes, abstracts, encyclopedias, handbooks, almanacs, and atlases. It also included several general guides to scientific and technical literature, and mentioned that specific guides to the literature of particular fields were available to them, too.

It was decided that the class in technical writing would be brought to the science library for the oral part of the instruction in library use. Thus, the students would be able to see the physical arrangement of the reference room, observe the placement of the more important indexes and other tools, and--as the students came from such a wide variety of backgrounds in regard to their respective majors--further examine any additional reference tools which might be of specific interest to them after the lecture was over.

When the students entered the library they were given a brief explanation of the arrangement of the library. They were shown the use of the author/title, subject, and periodical card catalogs, and were introduced to the L. C. List of Subject Headings.

An important goal of the oral instruction was to indicate to the

students how to progress from secondary to primary sources when doing research. The students were shown how to move from the general subject headings they found in the subject card catalog to particular secondary sources--such as texts or basic works on a particular topic, and then, from these, on to items in the bibliographies of these works. They were also shown how to use reference tools such as encyclopedias, indexes, and bibliographies to get to the primary literature.

The students were first introduced to guides to the scientific and technical literature and shown that they might utilize these guides in order to find out what kinds of tools and information sources were available to them in different fields.

They were then shown several different kinds of dictionaries, and several basic scientific encyclopedias. Encyclopedias are often a good place to begin a literature search as they can provide a quick general overview of the topic, introduce the terminology pertinent to the subject, and sometimes include useful bibliographies. They are also often up-dated by yearbooks.

The students were next shown different handbooks, almanacs, and statistical sources, and told how they could utilize this type of source to obtain specific facts and figures bearing on a particular topic.

The greatest part of the lecture was devoted to bibliographies, indexes, and abstracts which would enable the students to move directly into the primary literature of their respective fields. A variety of indexes which would be of general interest to persons of almost any scientific field were chosen--such as Applied Science and Technology Index,

Instructional Unit cont'd.

Science Citation Index, Biological Abstracts, and Chemical Abstracts. More specific indexes were also chosen in order to emphasize that these, too, existed for almost every field. It was pointed out that much important information is available from government documents, and the students were introduced to the Monthly Catalog. It was emphasized that they should investigate what was available to them in the main library as well as the science library, as they might often find that anything having to do with the philosophical, social, or economic aspects of science might well be located in that library.

The lecture concluded with a mention of the types of government documents which were located in the science library rather than the main library, and with the explanation that some of the holdings--particularly in the area of science documents--were to be found in the microforms room.

The students were invited to return to the library at their leisure and speak with Ms. Murphy in regard to particular reference tools or approaches to a search that might be best in researching specific topics. They were also requested to ask for help if they had any difficulty in using particular indexes or abstracts.

After the lecture, the students were requested by Ms. Fuller to choose a topic of research. Ms. Fuller and Ms. Murphy went over the topics together very carefully, approved those that they felt would be feasible to use, and made recommendations for change regarding some of the others.

The students first wrote an introduction to a hypothetical report, with a short bibliography appended. These were graded by Ms. Fuller. Later, the students had the option of continuing research on this topic

Instructional Unit cont'd.

for their final paper, or choosing a new topic if they felt they needed or wanted to do so. The students' research reports included bibliographies of the primary and secondary literature encountered while researching their subject in the library. The research reports were graded by Ms, Fuller, and were critiqued by the other students.

Many of the papers done by the class were outstanding not only in regard to writing, but also with respect to the length and content of the bibliographies and the amount of research the students did upon their subjects. Ms. Fuller's insistence that any student having difficulties consult the reference librarian resulted in a number of the students receiving individualized instruction in the reference tools available to them in their particular fields.

Ms. Fuller devoted a great deal of time and personal effort to the library and literature use instruction program. Moreover, she spent much time in working with Ms. Murphy on the final formulation and refining of the research topics, advising the students how to proceed on the projects, and on the evaluation of the results she got from her students, as is evidenced in her well organized report. The technical writing project would undoubtedly have been difficult to evaluate without the effort that Ms. Fuller put into the program. Moreover, in her report she has made several suggestions for future modifications of the program which will undoubtedly benefit the project. The library is indebted to her for her cooperation in this experiment, for modifying her class outline in order to implement it and for following up on it so thoroughly.

Instructional Unit cont'd.

Dr. McCormick emphasized the environmental and energy related aspects of engineering to a large extent. Since much environmental literature is located in the main, as well as the science library, Ms. Shelley Phipps and Mr. Douglas Jones, librarians from both the main and science libraries, compiled three brief bibliographies of pertinent sources in the fields of electrical and nuclear engineering and environmental and energy resources. As in the case of the technical writing course, the oral instruction was based on these bibliographies (which are attached). It was followed by specific research and report writing assignments which were personally designed and evaluated by Dr. McCormick, and which are discussed in Dr. McCormick's report on the project.

Many of Dr. McCormick's students' reports were excellent and evidenced the keen interest they felt in the class. As can be seen from the report which Dr. McCormick submitted, and as he points out--engineering freshmen can produce significantly better writing than the average freshman, if and when they find a topic on which they really enjoy writing.

Dr. McCormick has made a general analysis of his students' results, and also made some very interesting recommendations for the project for next year, which would certainly appear to be worth implementing. Dr. McCormick's enthusiasm about the project has resulted in the Engineering College agreeing to try to experiment with a similar program for some of the seniors in the coming year. Dr. McCormick's support and endorsement of the project to the College of Engineering--which is so vital for the continued success of the program--is very much appreciated.

Student Results

Student results are attached. They have been discussed by Dr. McCormick and Ms. Fuller in their respective reports.

There were many excellent reports, but some were significantly better than others either as to content and style of writing or as to the inclusion of primary and secondary literature in the bibliographies. The results were somewhat skewed by the fact that so many students were at different class levels--and it is not feasible to compare the work of freshmen with that of seniors and graduate students.

Many of the younger students did not seem to be aware of the vital importance of keeping abreast of the current primary journal literature in their fields. They tended to rely more heavily on the card catalog and on secondary sources. Some of them were probably less aware of newer and controversial aspects of their topics simply because of lack of familiarity with important journal literature and a newness to their major fields.

The library was really pleased with the interest many of the students showed in the program. While students often tend to find research and use of the library a difficult task, a surprising number of these students commented on the fact that they felt that they had really gotten a lot out of the library and literature use instruction, and many of the papers seemed to indicate this.

Reviews (Evaluation and Critique)

In addition to obtaining written evaluations from some of his students, Dr. McCormick used an informal class discussion as his method of having his students evaluate the program. The results are included in his report, along with his personal critique of the project.

Ms. Fuller asked her students for written evaluations of the project, and has attached the results along with her report, accompanied by an analysis of these results.

The library was glad that many of the students indicated in their written evaluations that they appreciated the library instruction which they received and had found the hand-out to be quite helpful. The library was also pleased that some of the students came back for more personalized instruction in particular indexes and for suggestions regarding their research papers.

Some of the suggestions of the students, along with the excellent comments made by the participating professors, should prove to be very helpful in improving the project in the coming year.

As was suggested, greater familiarity on the part of the students with the indexes earlier in the semester might be achieved by having students do a short research project involving two or three basic indexes. This could be done prior to the oral instruction. Another possibility might be the use of a programed learning unit involving PLATO which would instruct the students in the use of particular indexes. Dr. McCormick feels that some of the engineering faculty are interested in helping design experiments which will encourage the students to make better use than they now do of the science library.

A most important aspect of the project was the cooperation and interest shown on the part of Ms. Fuller and Dr. McCormick. Without that, little could have been accomplished, and it is owing mainly to their many suggestions and recommendations that meaningful results were obtained.

If projects such as this are to meet with success, an integral and vital part of the program must be to enlist the support, aid, and enthusiasm of the faculty and the various departments of the University. The degree of success which projects of this nature achieve is largely dependent on their support.

I-B Description of the Course

Technical Writing/English 108 is a fundamental course on the content and composition of technical papers. Students receive instruction on the planning and organization of various written communications in scientific and industrial societies. The course stresses the reader's need for informative data presented in a clear, concise and meaningful style.

During the course, students write short informal reports, such as a progress report, feasibility report, laboratory report and field trip report. They also write a final, major research report.

Orientation for the formal research report includes assignments on writing "beginning" and "terminal" components of research papers, such as an informative or descriptive abstract, an introduction, summary, conclusion and recommendation. For the main body(middle or "findings") of the formal report, students receive instruction on the principle of preparing a thesis statement and its consequent breakdown into an outline.

Instruction then directs the student toward a procedure in preparing a research report -- from inception of a theme to a finished manuscript on the subject. This study covers preliminary reading to focus on a specialized treatment of a subject, preparation of a rough outline and general bibliography, further specialized reading, organization of notes on index cards and a final outline before writing the paper.

The assignment of the research paper requires the student's ability to apply knowledge of components learned earlier in the term. This major project is critiqued by student peers and the instructor.

I-B (cont'd)

During the instruction described above, students also do exercises on composition and writing style of technical information.

Note:

This term the course included a specially prepared demonstration of library reference tools available for different disciplines of study. The presentation, prepared by Joan Murphy, Science Reference Librarian, occurred while the students also were learning the steps for preparing research papers.

(Class schedule is attached.)

English 108, Section 4
Spring 1977

Lecturer: D.N. Fuller

D. Fuller #4

Texts:

1. Sherman, T. A. and Johnson, S.S.: Modern Technical Writing, 3rd ed., Englewood Cliffs, N.J., Prentiss-Haas, 1975($9.95).
2. (Optional) Hodges, J.S. and Whitten, M.E.: Harbrace College Handbook, 7th ed., New York, N.Y., Harcourt Brace Jovanovich, Inc., 1973 ($6.95).

Class Schedule:

Date		Reading(S&J) (chapter)
Jan. 19-21	Introduction to the Course (in-class exercise)	2
Jan. 19-21	Mechanical Elements of Technical Papers (in-class exercise)	4,9
Jan. 24	Technique of Organization(outlines) (writing assignment)	3
Jan. 26-Feb. 2	Types of Tehnical Reports (in-class exercise, writing assignment)	8,11
Feb. 4-7	The Illustrated Report(graphics)	6
Feb. 9-11	Special Components of Technical Reports (in-class exercise, writing assignment)	9,11
Feb. 14-19	The "Researched" Report (writing assignment, library work)	10 library lecture
Feb. 25	The Technical Editor	10
Feb. 28-Mar.7	Special Problems of Technical Description (in-class exercise, writing assignment)	5(pg.72-101)
Mar. 9-11,21	The Investigation/Evaluation Report: Qualities of Writing Style (Assignment of final report, scheduling of conferences)	7
Mar. 23-25	The Professional Article / Oral Report	5
Mar. 28-Apr.22	Correspondence/Resumes/Job Application (writing assignments)	14, 15, 16
Apr. 25-28	Critique of Final Reports/Review	
May 1	Last Day of Classes: Evaluation/Question and Answer Period	

I-D Class Profile of English 108, Spring 1977

Technical Writing (English 108) is both a requisite and elective for students at the University of Arizona. Majors in the Agricultural College must complete a three-unit course in either Technical Writing or Business Writing, or Speech-Communication. Students selecting Technical Writing often are motivated toward advanced studies in their disciplines(opinion formed from teaching both courses).

Students may take Technical Writing, having first completed freshman English requirements, any term before graduation. Class standing, therefore, varies. Students also represent different areas of specialization since the Agricultural College encompasses many disciplines of study. The course is offered as an elective in other collegesat the University of Arizona — such as Liberal Arts; it also may be taken to fulfill a requirement for specialized studies. Consequently, class standing of students ranges from sophomore to graduate, discipline from Economics to Anthropology.

Class Standing in English 108, Spring 1977

Sophomore	4
Junior	1
Senior	13
Graduate	3

Disciplines Represented in English 108, Spring 1977

Forestry (2)	Animal Science (2)
Fisheries (2)	Child Development-Family Studies (2)
Natural Resources (1)	Hydrology-Watershed Management (1)
Nutrition-Dietetics (5)	Liberal Arts (5: Economics, Biology, History)
Range and Crop Management (1)	

II-D Assignments for Library Research, Technical Writing

Students went through several steps during the spring term in learning library skills.

(1) As an assignment prior to the library orientation, students submitted topics which they believed were challenging issues in their disciplines. These topics were screened, by Joan Murphy and Dorothy Fuller, for focus or narrowing-down of the subject, logic of subject matter and available research materials. If topics were approved, students used one for a following assignment; otherwise, students received suggestions for writing on another topic.

(2) The instructor assigned the writing of an "Introduction" to a research paper on the topics previously chosen by the students. Students received detailed instruction on the content and organization of this component, for example, reading for historical background or earlier findings on the topic(problem-"why"), leading to a statement on current research(solution-"what"). This instruction coincided with a library demonstration on use of secondary and primary sources, to research material on the "Introduction." In preparing this assignment, students were to include two secondary sources and three primary sources.

(3) The final, major assignment was the writing of a 2500-word research report due April 18. This report was to include a minimum of six primary sources and a list of secondary sources available in the individual's discipline of study. These reports were critiqued in class by students' peers. Those reviewing the papers were to comment also on the list of library tools, thus, receiving another exposure to available secondary sources.

(Copies of Introduction and Research Papers)

IV-A-D Evaluation and Personal Commentary

Papers were evaluated for references cited in the "Introduction" assigned early in the term and those cited in the research paper submitted toward the end of the term. The list of library tools(recuested with the research paper) was reviewed for student awareness of the scope(variety) of secondary sources.

Results showed that 17 papers improved in literature search, while two papers did not. Seven lists of library tools were superior(ten or more with variety in selection,for example, indexes, abstracts, handbooks, government documents); three lists were average (six to eight), with room for improvement; and nine were unsatisfactory(less than six with no variation).

The last day of classes students were asked to comment, in writing, on the value of the library orientation during the course. Sixteen class members were present out of 21 enrolled in the course; comments were anonymously stated. A typed copy of their hand-written comments is attached, and a summary follows.

Student personal comments on value of library unit in English 108, spring 1977

Unit was helpful in understanding library reference facilities: 7-8
(See 1, 2, 6, 7, 8, 11, 14, 16)

Unit was not helpful in understanding library reference facilities: 3
(See 3,9,12)

Unit can be improved: 5
(See 4, 5, 10, 13, 15)

Personal Commentary

The superior research papers in technical writing showed that the writer was more discriminating, than others in class, in selecting both secondary and primary sources. These students also found the library orientation helpful in their research or made suggestions for improvement.

IV-A-D(cont'd)

Three students based their reports on experiments, or research, they themselves were doing in their major study. This may have limited their use of the library orientation. In these instances no new search was made sin e they used references found prior to taking the course. Their list of "library tools" was either limited or missing.

Other"average" or less satisfactory papers were not correlated with the number of library tools listed(items ranged from 0 to 30). Some of these students were less skilled in writing ability, organization and reference citation. Others relied heavily on textbook material in citing references on their chosen subject, although primary sources appeared in their lists of references. Some of these students may have selected tools(secondary sources) directly from the library "handout" prepared for the orientation session. This does not negate a learning experience.

Project Evaluation

The project seems valuable according to comments made by the students at the end of the term(eight "helpful" - five "can be improved" out of 16 comments). Those who commented unfavorably may discover later in their careers that the project was of greater value than they realized at this time. The instructor's personal contact with the students indicated that those who got the most out of the project were the most motivated individuals in the class, slated for graduate studies in their fields. They were aware of the need for skills in library research, and might have acquired them in spite of the orientation. Other students showed interes by recommending additional instruction in their comments, and might respond well to more details in a demonstration.

IV-A-D(cont'd)

Future library-skill assignments will require a preliminary evaluation of the class before defining research exercises. "Class standing" and "discipline of study" may influence the direction a library demonstration should take in this course. Two sophomores did comparatively better than some seniors, and visa versa.

New methods of library orientation may be defined after the spring workshop at Earlham. However, preliminary evaluation could entail asking students to list, spontaneously, secondary sources available to them. Assignments could then be based on an average of the class's over-all knowledge of reference tools. A library demonstration could be coordinated with these skills. If the class average is on a novice level, a fundamental, programmed exercise might be best — similar to that developed at Earlham College. Here, the student will first find materials in the card catalog and progress to the more sophisticated tools through a series of steps. For those familiar with some reference skills, the secuence can start with a general subject and "guide to the literature" in a specific discipline, and progress to more complicated sources, such as "Science Citation Index."

Instructor's Recommendation

This project has been a valuable experience for the instructor. Future projects will need closer monitoring of students' progress in accuiring applicable primary sources and tools in the individual discipline of study. A "statement of progress" may be recuired on the research while students are preparing a paper. This may "trouble-shoot" last-minute reliance on textbook material, and encourage students to consult the reference librarian.

IV-A-D(cont'd)

The instructor will set a minimum on the number of tools to be listed and specify that some variety be represented, for example handbooks, encyclopedias, indexes, abstracts, government documents or professional journals that publish annual indexes.

This Technical Writing program is planned to attract students motivated toward scientific research -- including biological and physical sciences. Library skills should be an integral part of the learning experience in technical writing; as one student stated, "...it is the basis for good technical writing."

IV-A-B Student (anonymous) comments on library unit in technical writing

1. "The library section of this class was the most valuable part of the semester. I think that it should have been emphasized more and small assignments should been made forcing the use of different library tools. The list of tools available in the library for use in our field should have been separate from the paper."
2. "For the most part the library reference unit was beneficial. (It introduced me to the Science Library.) The list of reference tools was quite helpful. Time spent explaining and describing the contents of different books could be reduced; the student should be left to evaluate reference tools other than the most general. I thank you for encouraging us to learn more about the reference tools available in our fields. On my own, I found some gems which I did not know existed."
3. "I personally did not find the library unit helpful since I have spent much time in research already. The orientation day was not worthwhile as one hour is too short to adequately cover the materials available and too long for a general over-view. The library section should not be an integral part of the course, but rather something separate. It could be arranged as a self-taught unit so that those who are not familiar with library systems could learn it on a slef-paced basis with the specific materials used in their majors. This way too much time is spent for the benefit of a few students. The library handout is very useful."
4. "The library unit in this class seemed short and incomplete. Although technicues were presented, more emphasis could have been placed on gathering information. The tools were presented but the actual digging for viable material was not really emphasized. We sort of set out on our own in gathering the material needed. Maybe that was needed since we learned the hard way. Is that not the best way?"

IV-A-B (cont'd)

5. "The library presentation was oriented only to those in technical science fields. The majority of the class may have gained information from what was given but for myself, the main library would have been a more appropriate place for presenting research materials. General suggestions were helpful."
6. "Yes, it was extremely valuable for me because I was totally unaware of a number of the sources and how to use the reference library. It was too short, could be extended to cover two or more class periods. The information provided in that one session helped me with my research papers. It made the investigative work a bit easier."
7. " Extremely useful! ! ! I found this unit very informative and valuable. Though I was quite versed in the use of the library as a whole, the reference section was a maze; I was never aware of just how many sources were open to me. I think this section of study should be expanded--it is the basis for good technical writing! Maybe a little worksheet which has to be filled out by using indexes, etc., would help emphasize use and availability of sources. Miss Murphy also is very helpful and will/to assist an individual."
8. " The library meeting is helpful but the speaker should assume students are familiar with the card catalog. Scientific and technical resources should be emphasized. The handout is useful. Reference could be made to the course, 'Agriculture 209--Information Sources'."
9. "The library section did not reveal much new information to me. However, I would suspect that many students are not aware of the facility. The unit could be spiced up a bit and students encouraged to use the information which they have learned. One possible means of accomplishing this would be to have the students find some obscure information via the references. It might be fun."

IV-A-B(cont'd)

10. "More time and energy could have gone into how to find literature, especially references or indexes in the Science Library, and how to use references and indexes. Another class period and a homework assignment in using sources -- for example Biological Abstracts--could have provided more familiarity."

11. " The library part of this class was more than I ever had and while my paper was not what it should have been I did learn many things. The uses of this part were not the same for each specific area. It is very useful and should be kept. I did learn and can expand my knowledge of the library portion greatly into much more specific uses."

12. "As a graduating senior, I would be in very sad shape if I did not know how to use a library. I found the section unnecessary. However, I do understand that underclassmen in this class need the library presentation. Perhaps a more concise review is most appropriate."

13. "The library orientation was too superficial. The number of resources, abstracts, indexes...were overwhelming. The orientation could have easily been several hours longer. The highly condensed nature of the orientation tends to confuse the student; a longer orientation would resolve this.

14. "The library unit of this course was worthwhile and should be included in the course. While not a complete review of available materials, it made the research portion of preparing our final report much easier, since we had a base to work from. It enlightened me to numerous indices and secondary sources that facilitate quick information gathering. It helped me a lot."

15. " The effort was appreciated, but I feel less examples should have been used, with more attention given to the actual sources available. This approach would probably result in less time spent for that class period."

Iv-A-B (con'td)

16. " I thought it was good. It was still sometimes hard to find things. It could also have explained how to find and use abstracts in the library. More explanation is needed on how to use the various references, not only that they were there, but how to go about finding what you needed in the references that are available."

ELECTRICAL ENGINEERING -- 1

An orientation course in the general field of electrical engineering, including communications, computer, control and power engineering. It has two lecture and two laboratory periods a week.

In the fall of 1976, 110 students finished the course. In the spring term of 1977 the number was 34 students. The enrollment was as follows:

	Fall - 1976	Spring - 1977	Total
Engineers	96	24	120
Others	14	10	24
Total	110	34	144
Freshmen	81	16	97
Sophomore	20	10	30
Junior	6	4	10
Senior	3	4	7
Total	110	34	144

The library based unit of the course consisted of a one hour discussion/ demonstration of the major research tools of electrical engineers carried in the library. The library staff prepard a written bibliography of these tools and distributed it to each student following the demonstration.

The student was then required to write a paper using the resources of the library in most cases. It was graded for composition and content, and the grade was incorporated into the final mark for the course.

NUCLEAR ENGINEERING — 2

An orientation course introducing students to the field of nuclear engineering and to the faculty of the nuclear engineering department. It has two lecture and two laboratory periods a week.

In the fall term of 1976, the number of students completing the course was 40. In the spring term of 1977, the number was 27 students. The enrollment was as follows:

	Fall — 1976	Spring - 1977	Total
Engineers	32	24	56
Others	8	3	11
Total	40	27	67
Freshman	22	17	39
Sophomore	11	6	17
Junior	4	2	6
Senior	3	2	5
Total	40	27	67

The library based unit of the course consisted of a one hour discussion/demonstration by a member of the library staff of the major research tools of nuclear engineers. The staff prepared a written bibliography of these tools and distributed it to each student following the demonstration.

The student was then required to write a paper using the resources of the library in most cases. It was graded for composition and content, and the grade was incorporated into the final mark for the course.

In the College of Engineering at the University of Arizona, instruction and practice in the use of the library has been introduced as part of a research paper assignment. The project has been given in multiple sections of the introductory courses in the Electrical and Nuclear Engineering departments during the two semesters of the 1976-77 academic year. Although the majority of about two hundred students who participated are freshman engineers, about thirty others are more advanced and come from several colleges.

The research paper assignment has three objectives:

1. To give students practice in technical writing in addition to the required freshman English courses.

2. To introduce students to the intellectual resources of the library.

3. To encourage students to think critically about the impact of technology on the physical and social world, and to consider the role of the engineer today.

During the first term, students were encouraged to write about whatever interested them in the subject matter of the courses. Most of them chose short experiments they could do and report. For example, some measured the level of radioactivity in several areas of the campus. This gave them good practice in objective #1, reporting on a technical subject, but it was less satisfactory in meeting objectives #2 and #3.

In the second semester, as a result of the October 1976 conference at Earlham College, Indiana, the assignment was changed to a library-based research paper. Some students were again given their choice of subject

but they were asked to comment specifically on the social significance of what they reported. For example, several again chose to measure radioactivity on campus. The most highly radioactive was the library, one of the oldest buildings on campus, and they had to discover why this was so. (The source of the stone.) They were also asked to comment on the health hazard, if any, of the level of activity they found. (It was extremely low.)

Thus they were required to read more widely than the students in the first semester. They were taken to the library and given a one-hour introduction to the common encyclopedias, indices and abstracts in the science library that pertained to their department. And they were asked to refer to at least three sources in their paper.

This assignment met objectives #1 and #2 better than the first papers, but there were still weaknesses. A number of students skipped the library orientation on the ground that they already knew about the subject. A large number used popular references like Time and Popular Mechanics rather than primary material. And few students commented on the impact of technology.

During this second term, other students were given a single topic although they were encouraged to explore a variety of aspects of it. The assignment was: Assume that over a period of time (1-5-10-20 years) the quantity of petroleum available in the United States was reduced 40 percent.
1) What would be an appropriate engineering response to this situation?
2) What would be the effect of your proposed solution on the economy and life style of the United States?
The library orientation was repeated.

This topic met the three objectives better than the earlier assignments. Although it lacked laboratory or field experience, students accepted it as a

technical problem. They were also asked to append a page describing in sequence the steps they took to get the library material.

Evaluation and Critique

Our experience is similar in many ways to that at Earlham College. Because of the great variety in engineering students, it is not easy to produce a project that works well for all of them. Nonetheless, although the last assignment required a level of sophistication that most lower division students lack, they seemed to enjoy the opportunity to refine and organize their thoughts about technology. They need more written instructions which they can consult in each step of the paper, because they really do not know how to use the resources of the library. A library-based research paper is a practical means of getting engineering students to broaden their knowledge and sharpen their critical faculties. Above all, the three objectives outlined above cannot be obtained through a single assignment. Similar projects should be repeated in several courses and in each of the undergraduate years.

In the future, the student evaluation component needs to be formalized into a requirement. Most of the students did not respond in writing, and a classroom discussion produced only generalized replies. About 45% of the class approved of the assignment and thought it helpful. About 55% thought it was an extra burden, and they preferred to spend their time in the laboratories.

It is not going to be easy to overcome the resistance to formal report writing based on library as well as laboratory and field research. Students tend to feel that engineers are less able verbally than others, and perhaps this encourages them to avoid the written word. In fact, however, the

students in this project did as well as, and perhaps a little better than, the average freshman. This observation also needs further study.

To help themselves overcome the resistance, students need to feel they can be successful. They need to use the library as a source of specific information and, in addition, for both general knowledge and pleasure derived from reading. In this project the use of the library was attached to a term paper because students also need much more practice in writing. In addition, faculty members have high verbal facility and place a high value on the written word.

As the project begins to include more advanced students, we need to uncouple the library-research paper approach for some students and devise more library-laboratory approaches. A major goal should be to make the use of the library into a useful and pleasant experience.

APPLICATION TO PARTICIPATE

IN EARLHAM COLLEGE'S

"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION

IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. Librarian's name and position.

   James F. Comes, Department of Library Service

2. Faculty member's name and department.

   Dr. Ruth H. Howes, Physics Department

3. Address to which correspondence should be sent.

   James F. Comes
   Science-Health Science Library
   CP 349
   Ball State University
   Muncie, IN 47306

4. Phone number.

   (317) 285-7889

5. For what course(s) would your course-related library and literature instruction be intended? Give title, general description, and average number of students enrolled per year:

   Colloquium in Science and Mathematics (GENED 220) is a multidisciplinary introduction to science and mathematics. The problem-based course currently focuses on arms and arms control as an umbrella topic to demonstrate the impact of developments in the basic sciences (physics in particular) on technology and society as a whole. The course meets in general session for two hours a week and is subdivided into small discussion sections and task forces. Enrollment is currently around ninety students per year.

APPLICATION TO PARTICIPATE

IN EARLHAM COLLEGE'S

"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION

IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. Librarian's name and position.

GLEN GORDON TILLER ASSISTANT DIRECTOR (PUBLIC SERVICES)

2. Faculty member's name and department.

MARION E. CORNELIUS DEPT. OF SCIENCE AND MATHEMATICS

3. Address to which correspondence should be sent:

CENTRAL ARIZONA COLLEGE
INSTRUCTIONAL MATERIALS CENTER
COOLIDGE, ARIZONA 85228

4. Phone number.

602-723-4141 ex 207

5. For what coures(s) would your course-related library and literature instruction be intended? Give title, general description, and average number of students enrolled per year:

SEE ATTACHFD SHEET

6. For the librarian (complete A and B, or C). (Use extra sheets if necessary.)

A. Have you given any library instruction, either course-related, informal group instruction, or a separate course? Describe what you have done. Please include samples of any materials you have prepared.

SEE ATTACHED SHEET

5.

Biol 100-Fundamental Biology

A general education course for students not majoring in science. Relates man to the living organisms around him, their structure, function, development and variability. May be followed by another course in the biological sciences to fullfill the eight hours laboratory science requirement of some transfer programs.

Biol 103-Zoology

A study of the invertebrate animal, protozoa through the echinoderms. Emphasis upon structure, habitat, enviornmental interaction and comparison. Prerequisite or corequiste: High school chemistry or Chem 100 and high school biology or Biol 100.

Biol 104-Zoology

A study of lower chordates through the complexity of the human vertebrate with an introduction into ten human systems, both functional and structural. Comparative structure, embryonic development, heredity and behavioral aspects will be studied. Prerequisite: Biol 103 or consent of the instructor.

Biol 106-Anatomy-Physiology

A continuation of Biol 105 with a brief review and detailed study of the respiratory, digestive, excretory and reproductive systems; climaxing with an emphasis on fluid-electrolyte and acid-base balance and stress metabolism. Prerequisite: Biol 105 or consent of the instructor.

(86)

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APPLICATION TO PARTICIPATE

IN EARLHAM COLLEGE'S

"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION

IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. Librarian's name and position.

   Robin Martin
   Director of Public Services

2. Faculty member's name and department.
   Dr, Kenneth Tuinstra
   Assistant Professor of Biology

3. Address to which correspondence should be sent.
   Learning Resource Center
   Central College
   Pella, Iowa 50219

4. Phone number.

   515 628-4151 Ext, 233

5. For what course(s) would your course-related library and literature instruction be intended? Give title, general description, and average number of students enrolled per year:

   (1) Biol. 100L Issues in Biology -60/yr.
   (2) Biol. 300L Biology & Society -20-25/yr.
   (3) Biol. 121, 122, 123 Foundations of Biology I,II,III-300/yr.
   (4) Biol. 490 Theoretical Biol. 5-10/yr.
   (5) Biol. 491 Independent Study in Biology 5-10/yr.

SEE ATTACHED SHEET

QUESTION 5

Biol. 100L Issues in Biology 60/yr.
Study of major bioligically based challenges facing humanity. Primarily discussion with some modules for background information.

Biol. 300L Biolgoy & Society 20-25/yr.
Non-laboratory course dealing with biologically based problems in human society . Topics such as genetics of race, population problems, genetic engineering, birth control , environment/heredity conficlts. Emphasis on recitation/discussion.

Biol. 121, 122, 123 Foundations of Biology 300/yr.
Elementary techniques and methodology of bioscience includes energy flow and tranformation, genetics, ecology, cell structure and function of plant and human systems. Lab and discussion.

Biol 490 Theoretical Biology 5-10/yr
Critical reconsideration of biological concepts - historical philosophical and futuristic perspectives; evolutionary and general systems theories; biology as an autonomous science and in relation to other sciences and the Humanities.

Biol 491 Independent Study in Biology 5-10/yr.
Research oriented experience to focus methodologies of previous course work on a single, well-defined problem. Senior standing.

#41

APPLICATION TO PARTICIPATE

IN EARLHAM COLLEGE'S

"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION

IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. Librarian's name and position.

   Rose Anne Simon Library-Faculty Liaison Officer and Coordinator of Professional Information Services

2. Faculty member's name and department.

   Frank Keegan Biology Department

3. Address to which correspondance should be sent:

   Library
   Guilford College
   Greensboro, North Carolina 27410

4. Phone number.
   (919) 292 5511 ext. 264 or 249

5. For what course(s) would your course-related library and literature instruction be intended? Give title, general description, and average number of students enrolled per year:

   (See next sheet.)

6. For the librarian (complete A and B, or C). (Use extra sheets if necessary.)

   A. Have you given any library instruction, either course-related, informal group instruction, or a separate course? Describe what you have done. Please include samples of any materials you have prepared.

   (These samples appear at the end of this application.)

5. For what course(s) would your course-related library and literature instruction be intended?

CELL BIOLOGY. Microscopic structure of cells and cell organelles; biochemical components and functions of cell organelles as related to morphology; growth and division processes of cells with particular emphasis on morphological characteristics and biochemical changes during growth and development. Laboratory techniques such as autoradiography and isolation and characterization of cell organelles utilized. 40 students/year.

ANIMAL PHYSIOLOGY. The various physiological processes characteristic of living organisms; the functioning of the individual organ systems with emphasis on the interrelationships between organ systems and the functioning of the organ systems in the maintenance of homeostasis; selected topics in comparative vertebrate physiology. Laboratory examination of the characteristics of muscles, the electrical properties of nerve conduction, reflex function, blood and its circulation, kidney function, and somesthetic sensations. 20 students/year.

MICROBIOLOGY. Structure, classification, nutrition, and biochemistry of micro-organisms; microbiological causes and treatments of various disease conditions, bacterial genetics, sporulation, and the processes of viral infection. 20 students/year.

BIOCHEMISTRY. The chemical structure and physiological function of the biochemical building blocks of living organisms; structure and function of proteins, carbohydrates, lipids, and nucleic acids studied and correlated with their structural properties and functions in cells; particular emphasis on the mechanisms of synthesis of proteins and nucleic acids. 12 students/year.

HUMAN ANATOMY AND PHYSIOLOGY. Detailed study of the human body including a study of all organ systems, the interrelationships between structure and function, the effects of exercise, and the characteristics of a variety of disease conditions. Laboratory study of the anatomy of the body using the cat primarily and selected experiments in circulatory, nerve, muscle and exercise physiology with emphasis on the physiological responses of the human body. Designed to meet the special needs of the physical education major. 30 students/year.

#54

APPLICATION TO PARTICIPATE

IN EARLHAM COLLEGE'S

"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION

IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. Librarian's name and position. Katherine R. Smith
Science Librarian

2. Faculty member's name and department. W. Allan Powell
Professor of Chemistry and Department Chairman

3. Address to which correspondence should be sent.

UR/VISR Science Library
University of Richmond, Va. 23173

4. Phone number. 804-285-6309

5. For what coures(s) would your course-related library and literature instruction be intended? Give title, general description, and average number of students enrolled per year:

103-104	150 students per course
105-106	25 students per course
205-206	80 students per course

SEE ATTACHED FOR DESCRIPTION OF COURSES

5. Description of Courses

103-104 FUNDAMENTALS OF CHEMISTRY (8).

The principles of chemistry, including atomic and molecular structure, chemical bonding, the periodic table, the states of matter, reaction rates, chemical equilibria, electrochemistry, and energy relationships. A systematic study of the families of elements. The laboratory work includes inorganic qualitative analysis. This course is designed for science-oriented students but may be taken by other interested persons. It satisfies the requirement for the Chemistry major and serves as a prerequisite for medical, dental, or related studies. Three lecture and three laboratory hours a week. Prerequisites: high school algebra and geometry. Previous knowledge of chemistry is not required.

105-106 CHEMISTRY FOR MODERN TIMES (8).

Principles and concepts of chemistry with an emphasis on their development, their relationship to the cultural environment, mutual influences between science and society, and consumer protection methods. For majors in fields other than science; will not meet requirements for medical or dental school nor serve as basis for further work in science. Three lectures and three laboratory hours a week.

205-206 ORGANIC CHEMISTRY (4-4).

The chemistry of the compounds of carbon, which is fundamental to an understanding of both chemistry and biology. The organic structure, nomenclature, reactions, and reaction mechanisms of hydrocarbons are examined in the first semester. A similar study of the organic compounds containing halogens, oxygen, nitrogen and sulfur, including those which form the fundamental building blocks of the macromolecules of living systems, is conducted second semester. Prerequisite: Course 103-104.

APPLICATION TO PARTICIPATE

IN EARLHAM COLLEGE'S

"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION

IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. Librarian's name and position.

Mary Lou Stewart, Assistant Reference Librarian, Science and Health Science

2. Faculty member's name and department.

Phyllis Eckman, Assistant Professor of Nursing

3. Address to which correspondence should be sent/

c/o Mary Lou Stewart
Walter E. Helmke Library
Indiana University-Purdue University
at Fort Wayne
2101 Coliseum Blvd. East,
Fort Wayne, Indiana 46805

4. Phone number.
(219) 482-5887

5. For what coures(s) would your course-related library and literature instruction be intended? Give title, general description, and average number of students enrolled per year:

see Enclosure A: Course Outline, Nursing 224, IU-PU, FW

60 students per semester are involved.

INDIANA UNIVERSITY - PURDUE UNIVERSITY AT FORT WAYNE
DEPARTMENT OF NURSING
NUR 224
NURSING III
COURSE OUTLINE
MEDICAL-SURGICAL NURSING OF ADULTS AND CHILDREN

Class: 5 credit hours
Laboratory: 15 hours
Credits: 10

Course Description:

Utilizes the nursing process in caring for adults and children who experience complex problems related to selected basic human needs. Laboratory experiences are provided in hospitals and other community agencies.

Course Objectives:

1. Utilize the nursing process in caring for individuals with problems in oxygenation, nutrition, physical activity, fluid and electrolyte balance, and rest.
2. Develop nursing care plans designed to meet the needs of individuals with complex health problems.
3. Increase skill in teaching health concepts and practices to the patient and his family.
4. Apply concepts from allied health disciplines in meeting the health needs of the individual.
5. Contribute to provision of continuity of care for the patient.
6. Utilize the health team approach in helping the individual to attain optimum fullfillment of his health needs.

Methods of Instruction:

Lecture, discussion, audio-visual materials, student reports, pre- and post-conferences, laboratory and use of patient models.

Methods of Evaluation:

Written assignments, class participation, quizzes, examinations and clinical supervision.

Summary of Content:

Unit I	Utilization of the Nursing Process in Caring for Patients with Problems of Rest
Unit II	Utilization of the Nursing Process in Caring for Patients with Problems of Nutrition
Unit III	Utilization of the Nursing Process in Caring for Patients with Problems of Oxygenation
Unit IV	Utilization of the Nursing Process in Caring for Patients with Problems of Physical Activity
Unit V	Utilization of the Nursing Process in Caring for Patients with Problems of Fluid and Electrolyte Balance

Textbook for Course:

Marlow, Dorothy R., Textbook of Pediatric Nursing, Philadelphia, W.B. Saunders Company, Fourth Edition, 1973, pp. 776. (As was required for NUR. 115 and NUR 116.)

Shafer, Kathleen Newton; Sawyer, Janet R.; McCluskey, Audrey M.; Beck, Edna Lifgren and Phipps, Wilma Joy, Medical-Surgical Nursing, Saint Louis, The C. V. Mosby Company, Sixth Edition, 1975, pp. 1032. (As was required for NUR. 115 and NUR. 116.)

Taber, Clarence, Taber's Cyclopedic Medical Dictionary, Philadelphia, F.A. Davis Company, 12th Revised Edition, 1974. (As was required for NUR. 115 and NUR. 116.) or any relatively current medical dictionary.

Major Aspects to be considered in Reading, Lecture, Discussion and Clinical Experience:

The disease process:

Incidence
Pathology
Signs and symptoms
Diagnosis
Treatment
Prevention/Control

Nursing intervention:

Conservation of energy
Conservation of structure
Conservation of personal integrity
Conservation of social integrity

H-3

APPLICATION TO PARTICIPATE

IN EARLHAM COLLEGE'S

"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION

IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. **Librarian's name and position.**

   Evelyn Staatz

   Public Services Librarian

2. **Faculty member's name and department.**

   Patricia A. Lorenz
   Life Sciences (Biology)

3. **Address to which correspondence should be sent.**

   Penn Valley Community College
   3201 Southwest Trafficway
   Kansas City, MO 64111

4. **Phone number.**

   (816) 756-2800

5. **For what coures(s) would your course-related library and literature instruction be intended? Give title, general description, and average number of students enrolled per year:**

   Molecular Basis of Living Systems - fundamental principles of chemistry, morphology and physiology, applied to the cell; an introductory course to prepare allied health students for anatomy and physiology or microbiology courses. 300 students/year

   Human Physiology - functions of the human body, cellular, organic and systemic levels; students have had some college work including anatomy and either chemistry or course described above; a laboratory is included. 25 students/year

APPLICATION TO PARTICIPATE

IN EARLHAM COLLEGE'S

"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION

IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. Librarian's name and position.

Anatole Scaun, Assistant Science and Technology Librarian

2. Faculty member's name and department.

Dr. Charles J. Hurst, Department of Mechanical Engineering

3. Address to which correspondence should be sent:

Anatole Scaun
Newman Library
Virginia Polytechnic Institute
and State University
Blacksburg, Va. 24060

4. Phone number.

(703) 951-6354

5. For what coures(s) would your course-related library and literature instruction be intended? Give title, general description, and average number of students enrolled per year:

Course-related library and literature instruction would be included in the required junior level laboratory course, Mechanical Engineering Lab 1. This course meets for two lectures per week and one laboratory per week. In the laboratory period the students work in groups of no more than nine students under the tuteledge of a professoral faculty member. The major thrust of the course is in helping the student learn to write lucid technical reports. The students are required to go to the library to obtain background material for some of the report writing they do during the quarter. Approximately 150 students take this course per year.

(TI)

A

DREW UNIVERSITY

Madison, New Jersey 07940 / 201-377-3000

Rose Memorial Library

Madison Chemistry New Jersey

APPLICATION TO PARTICIPATE
IN EARLHAM COLLEGE'S
"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION
IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. Librarian's name and position.

   Pamela Snelson. Reference Librarian.

2. Faculty member's name and department.

   Donald A. Scott. Professor of Chemistry.

3. Address to which correspondence should be sent.

   Reference Department
   Rose Memorial Library
   Drew University
   Madison, New Jersey 07940

4. Phone Number: 201-377-3000 Extensions #481, 480, & 483.

5. a) Chem 4 "Molecules of Life" --- first course taken by those with high school chemistry --- enrollment 120-130.
   Chem 5 "Chemical Energy and Life" --- 2nd semester following Chem 4--- inorganic and physical --- enrollment 70-80.
   Chem 21 "Reactions and Mechanisms" --- predominantly carbon compounds organized according to mechanism of reaction --- enrollment 45-60.
   Chem 22 "Ionic Equilibrium" --- quantitative and some qualitative --- enrollment 30-40.

   b) Physics 1,2 / Introductory Physics.

(8-1)

A

APPLICATION TO PARTICIPATE

IN EARLHAM COLLEGE'S

"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION

IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. **Librarian's name and position.**

   William Miller Reference Librarian
   Stockwell Memorial Library
   Albion College

2. **Faculty member's name and department.**

   John W. Parker Geology Department

3. **Address to which correspondence should be sent/**

   William Miller
   Reference Librarian
   Albion College --Stockwell Memorial Library
   Albion, Michigan 49224

4. **Phone number.**

   1-517-629-5511 ext. 382

5. **For what coures(s) would your course-related library and literature instruction be intended? Give title, general description, and average number of students enrolled per year:**

Geology 107 Introduction to the Geological Sciences 40 to 50 students
Geological, geochemical and geophysical approaches to the age, composition, evolution, structure, processes, and shape of the earth. Lecture, labs, field trips

Geology 209 Paleontology 18 students Evolution of invertebrate animals is theme for study of fossils, their description and use in practical field geology and mineral exploration.

Geology 402 Seminar in Volcanology 10 students a senior seminar

Proposed follow-up courses for fall, 1978: Geology 107 again; Geology 111 (Physical and Economic Geography); Geology 210 (Historical Geology)

APPLICATION TO PARTICIPATE

IN EARLHAM COLLEGE'S

"DEVELOPMENT OF COURSE RELATED LIBRARY AND LITERATURE USE INSTRUCTION

IN UNDERGRADUATE SCIENCE PROGRAMS" PROJECT

1. Librarian's name and position.

   Cecilia P. Mullen, Acting Head
   Science & Engineering Dept.
   San Jose State University Library

2. Faculty member's name and department.

   Leonard Feldman
   Mathematics Dept.
   San Jose State University

3. Address to which correspondence should be sent.

   Cecilia P. Mullen, Acting Head
   Science & Engineering Dept.
   San Jose State University Library
   250 South 4th Street
   San Jose, California 95192

4. Phone number.

   (408) 277-3388

5. For what coures(s) would your course-related library and literature instruction be intended? Give title, general description, and average number of students enrolled per year:

   Math 96 Useful Mathematics for Non-Scientific Careers
   This lower division 3 semester unit course is designed to show the value of quantitative and abstract approaches in a wide variety of professional fields. It will be taught with a direct attempt to alleviate anxieties which many students have when studying mathematics. The course is a new one with an expected enrollment of 140 students per year.